

Calculus Warm Up # 6-2

No warm up today.
Just quiet study time.

HW & Classwork:
Green FR practice # 1 - 3

continued from yellow FR:

6. The function g is continuous for all real numbers x and is defined by

$$g(x) = \frac{\cos(2x) - 1}{x^2} \text{ for } x \neq 0.$$

- (a) Use L'Hospital's Rule to find the value of $g(0)$. Show the work that leads to your answer.
 (b) Let f be the function given by $f(x) = \cos(2x)$. Write the first four nonzero terms and the general term of the Taylor series for f about $x = 0$.
 (c) Use your answer from part (b) to write the first three nonzero terms and the general term of the Taylor series for g about $x = 0$.
 (d) Determine whether g has a relative minimum, a relative maximum, or neither at $x = 0$. Justify your answer.

$$\begin{aligned} \text{a) } g(0) &= \lim_{x \rightarrow 0} \left[\frac{\cos 2x - 1}{x^2} \right] = \frac{0}{0} \\ &= \lim_{x \rightarrow 0} \left[\frac{-\cancel{2} \sin 2x}{\cancel{2}x} \right] = \frac{0}{0} \\ &= \lim_{x \rightarrow 0} \left[\frac{-2 \cos 2x}{1} \right] = \boxed{-2} \end{aligned}$$

b) ...
more later.

I'm hungry
and need to
go home!



5/1 Well, I was going to, but I got hungry again. I should really bring some snacks to school...

Tomorrow, I promise!